

**FACT SHEET**  
**And**  
**NPDES WASTEWATER DISCHARGE PERMIT EVALUATION**

Department of Environmental Quality  
Northwest Region – Portland Office  
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**PERMITTEE:** City of Portland  
Bureau of Environmental Services  
1120 SW 5th Avenue  
Portland, OR 97204  
File Number: 70725

**SOURCE LOCATION:** 5001 North Columbia Boulevard, Portland, Multnomah County, Oregon

**SOURCE CONTACT:** Daniel Clark Telephone Number: 503-823-2494

**PERMIT WRITER:** Lyle Christensen Telephone Number: 503-229-5295

**PROPOSED ACTION:** Renewal of a National Pollutant Discharge Elimination System (NPDES) wastewater discharge permit.

**SOURCE CATEGORY:** Major Domestic

**TREATMENT SYSTEM CLASS:** Level IV

**COLLECTION SYSTEM CLASS:** Level IV

**PERMIT APPLICATION DATE:** May 6, 2002 with supplements submitted November 8, 2005

**PERMIT APPLICATION NUMBER:** 985931

## **BACKGROUND**

### **Introduction**

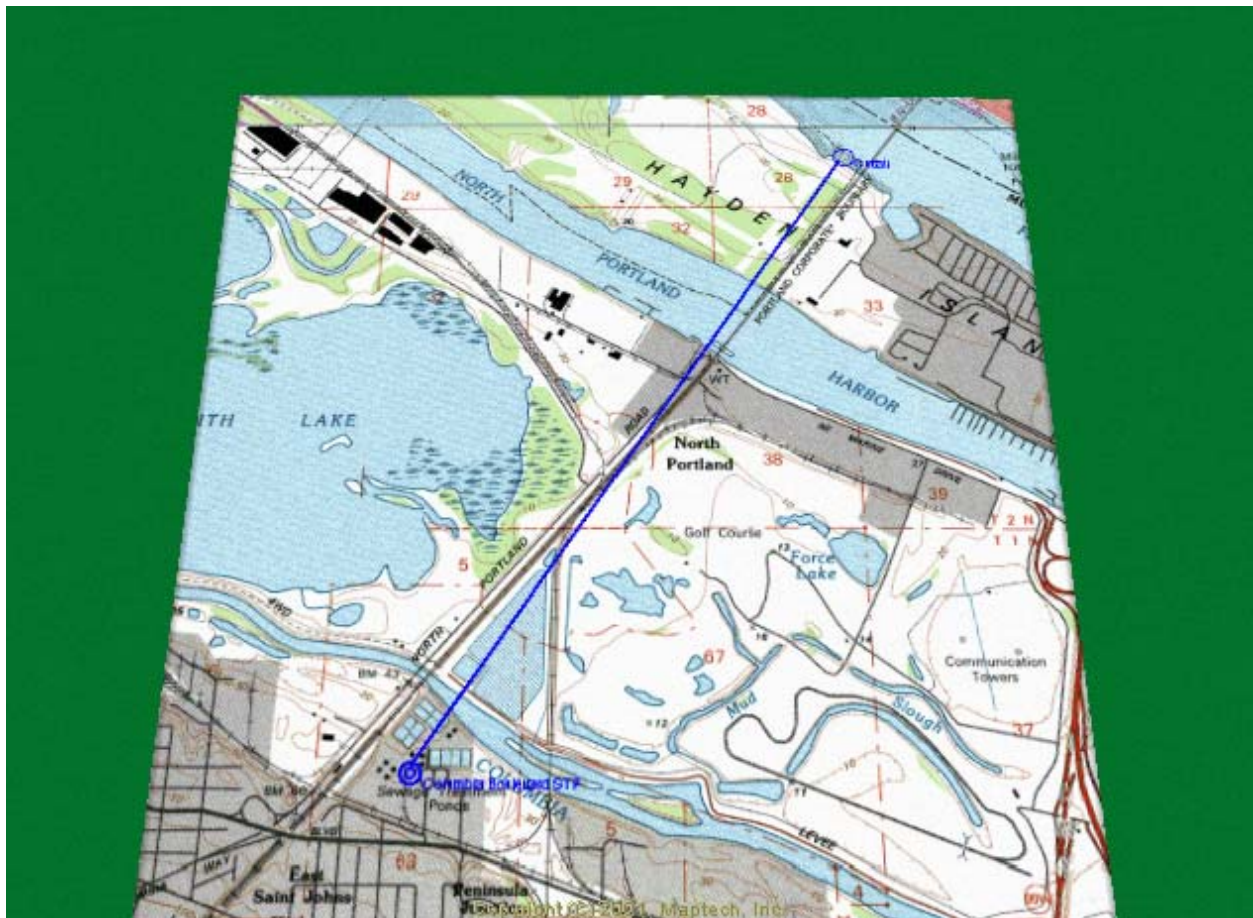
City of Portland operates the Columbia Boulevard wastewater treatment facility located in Portland, Oregon. Wastewater is treated and discharged to Columbia River in accordance with National Pollutant Discharge Elimination System (NPDES) Permit number 101505. The permit for the facility was issued on November 27, 1997, and expired on October 31, 2002.

The Department received a renewal application on May 6, 2002. Supplemental application materials were received on November 8, 2005. Because the permit application for renewal was received in a timely manner, the current permit remains in force until final action is taken on this application per Oregon Administrative Rule 340-045-0040. A renewal permit is necessary to discharge to state waters pursuant to provisions of Oregon Revised Statutes (ORS) 468B.050 and the Federal Clean Water Act. The Department proposes to renew the permit. This evaluation report describes the basis and methodology used in developing the permit.

This permit is a joint federal and state permit and subject to federal and state regulations. The Clean Water Act, the Code of Federal Regulations, and numerous guidelines of the Environmental Protection Agency provide the federal permit requirements. The Oregon Revised Statutes, Oregon Administrative Rules, and policies and guidelines of the Department of Environmental Quality provide the state permitting requirements.

### **Facility Description**

The City of Portland's wastewater treatment facilities are located in North Portland along the Columbia Slough and have their primary discharge directly to the Columbia River off the north shore of Hayden Island nearly 2 miles from the plant site. See below



This Columbia Boulevard Sewage Treatment Plant was originally placed into operation in 1952. At that time, a primary only treatment facility was constructed to provide treatment for Portland's sewage piped to the plant site. During rain events Portland's combined sewer system was designed to overflow at various points throughout the collection system. In 1972 the first secondary treatment processes were constructed becoming the Columbia Boulevard Wastewater Treatment Plant

(CBWTP). The last major expansion occurred in 2000 with the completion of the Columbia Slough Consolidation Conduit, addition of wet weather treatment facilities (CBWWTF) and the addition of a second outfall pipeline into the Columbia River (outfall 003) along with dechlorination facilities on Hayden Island. The CBWWTF allowed additional capacity for treatment of captured combined sewer overflows (CSOs) that were previously released at a number of points directly to the Columbia Slough. Presently the city is nearing completion of the second phase of the “Big Pipe Project” which will capture and control additional CSOs from along the Willamette River. This second phase includes a large pump station located on Swan Island and a westside Willamette River CSO capture tunnel to be completed in 2006. By 2011, the project is expected to be finished when a second large tunnel is completed to capture and control a majority of the east bank of the Willamette River CSOs. With an anticipation of increasing flow to CBWTP site from additional captured CSOs along the Willamette River and the Columbia Slough, the second outfall will allow all flow reaching CBWTP site to also be discharged to the Columbia River. When influent flow exceeds the secondary treatment capacity of the CBWTP, this excess flow will be diverted through the CBWWTF.

The CBWTP treats wastewater from a reported service population of over 600,000 persons along with industrial and commercial flow. Population equivalent loading (based on discharge monitoring report data for the past three years) indicates an average loading that is equivalent to close to 700,000 persons. The major treatment process used is activated sludge. The engineer who designed the facility determined the average design dry weather flow. It is the estimated maximum flow during May 1 to October 31 (expressed as a daily average flow), at which the design engineer expects the treatment facility can still consistently meet all effluent limits.

Design dry weather flow is used mostly to estimate how much treatment capacity there is for organic loads. For this facility, the average design dry weather flow is 100 million gallons/day (MGD). The current actual dry weather flow for May 1 to October 31, for the past two years, has been about 58 MGD. Based on the current flows, this facility is at only around 58% of the organic treatment capacity during dry weather. Based on the current low flows compared to the design flows, and the lack of recurring effluent violations, no expansion of the facility is needed at this time for dry weather treatment. However as this system is a combined sewer system, when captured combined sewage is routed to the plant increasing flows related to rain events during the dry weather may stress the system’s hydraulic capacity.

The current reported average wet weather flow (November 1 through April 30), for the past two years, is about 75 MGD. The peak day flow over the past two years was 194 MGD. (See the section on combined sewer overflows/outfalls for a further discussion of winter flows and hydraulic capacity issues.)

When peak instantaneous flows entering the plant exceed the 100 MGD secondary treatment capacity, flow may be diverted around the secondary portion of the plant and discharged following the CBWWTF’s solids and floatables removal, primary clarification and disinfection.

### **Biosolids Management and Utilization**

The permittee’s Biosolids Management Plan was approved May 18, 1987. An update dated February 2002 to the management plan was provided with the application. Additional updates are  
Final May 2006

provided annually by the permittee. All waste sludge must be managed in accordance with the Department approved plan to ensure compliance with the federal biosolids regulations (40 CFR Part 503). After treatment necessary to comply with vector attraction and pathogen reduction requirements, the Class B biosolids are beneficially land applied on sites that are in Umatilla County and Sherman County. Any future land application sites must conform to the site selection criteria in the Biosolids Management Plan. Per discussion with the city and the city's Biosolids Land Application Plan dated April 23, 2002, additional sites may be identified in the future for land application in any of the following counties: Sherman, Umatilla, Wasco, Morrow, Marion, Polk and Yamhill.

The permittee stabilizes biosolids using anaerobic digestion to meet the Class B pathogen reduction and vector attraction reduction criteria. These biosolids are then dewatered using filter belt presses and transported as 17% total solids cake to the land application sites. In 2004 nearly 13,000 dry tons of biosolid materials were applied at agronomic rates to the approved sites.

This permit requires monthly reporting of the methods used to comply with vector attraction and pathogen reduction requirements. It also requires the submittal of an annual summary of this facilities biosolids monitoring. In addition, the permittee conducts chemical testing of biosolids to be land applied which includes analysis of metals. The 2004 monitoring data averages for monthly samples taken of anaerobically digested solids were as follows:

<b><u>Parameter</u></b>	<b><u>Concentration (mg/kg)</u></b>	<b><u>EPA Pollutant Concentration Limits (mg/kg)</u></b>
Arsenic	3.73	41
Cadmium	3.04	39
Chromium	73	Not limited
Copper	362	1500
Lead	89	300
Mercury	1.66	17
Molybdenum	13.5	75
Nickel	44	420
Selenium	4.52	100
Silver	25	Not limited
Zinc	907	2800

The CBWTP biosolids composting complex is no longer being used. Though proven effective as a method to further stabilize biosolids and produce a Class A product (virtually unregulated for use), the compost was very costly to produce and did not fit into the city's long term plan for biosolids. Most of the system remains in place but portions of these facilities have been converted to other uses.

### **Inflow and Infiltration (I/I)**

The City of Portland sewage collection system is about 58% separate sanitary sewers and 42% combined storm and sanitary sewers. The city has an ongoing program in place to control and limit

extraneous flow to their separate sanitary sewers, however in the combined area, the sewers are expected to capture and remove storm water flow in addition to the sanitary waste stream.

### **Pretreatment**

The City of Portland implements an industrial pretreatment program approved by the Department in 1982. Federal and state pretreatment requirements were included in the NPDES permit for this facility when the previous permit was issued. Schedule E of this permit has been amended from previous version to include the requirements contained in the new federal pretreatment streamlining rules (40 CFR §403) that went into effect November 14, 2005. The revised Schedule E was developed to fully conform to the federal pretreatment program requirements including reduced monitoring of industrial users to the federal minimum of once annually. Also, Schedule C of this permit includes a provision that allows the City one year from issuance of this permit to propose changes to the existing pretreatment legal authorities and procedures to conform to the new rules. These revisions must be submitted to the DEQ for approval before the pretreatment program may implement the new federal requirements.

The City of Portland currently regulates 160 industrial users of which 78 are identified as being significant.

A Pretreatment Compliance Audit (PCA) of the industrial pretreatment program was conducted on May 9-11, 2000. The primary focus of the PCA was to evaluate the accuracy of the information provided in previous annual reports and the adequacy of program implementation and industrial user compliance records and files. As a result of the PCA, the Department's report dated August 3, 2000, listed nine required actions and three recommended actions. In addition a Notice of Noncompliance (WQ\M-NWR-00-081) was issued to the City as a result of this PCA. The response dated August 31, 2000, satisfied the Department that most all of the required and recommended actions had been addressed. A second Notice of Noncompliance (WQ\M-NWR-00-115) was issued addressing the remaining issues.

A PCA was again conducted by DEQ on April 19-22, 2004. On May 3, 2004, Portland received DEQ's follow-up audit report and provided DEQ with a written response regarding the recommended and required actions on June 15, 2004. DEQ approved Portland's response to the audit on October 26, 2004. The state pretreatment coordinator will continue to work with the permittee to assure compliance with the pretreatment program.

Included with the permit application was a "Technical Evaluation of Need to Revise City of Portland's Local Limits". The Department has reviewed this document and is in agreement with the conclusions in most areas. Two areas that will require discussion in the future are sulfides and NP-FOG. The sulfide issue has been raised in the past when pump station upgrades come under review and will continue to be an area of Department concern. Since this report, the City has removed dissolved sulfide as a local limit. Their determination was that the sulfide in the collection system occurs not as a result the regulated sources but is primarily generated by the collection system. The City reported "that there have not been any reported problems to date with sulfide in the collection system".

The Department has approved five industrial waste pretreatment program modifications since the expiration of the NPDES permit. The DEQ was unable to incorporate these changes into the NPDES permit because the permit was expired and administratively extended by the Agency. Therefore, the

Final May 2006

DEQ hereby incorporates by reference the following pretreatment program modifications as part of this NPDES permit renewal: Inter-governmental pretreatment agreement between Portland and the Unified Sewerage Agency (now Clean Water Services), approved by DEQ on July 20, 1999; Inter-governmental pretreatment agreement between Portland and Multnomah County, approved by DEQ on November 12, 2003; Inter-governmental pretreatment agreement between Portland and Dunthorpe-Riverdale Improvement District, approved by DEQ on November 12, 2003; and, removal of the sulfide local limit, approved by DEQ on June 2, 2004.

### **Groundwater**

For many years the Triangle Lagoon has been operated as a storage basin for wastewater derived solids and settling of plant related materials from cleaning basins, digesters and other tankage as necessary. Due to concerns over potential impacts on groundwater from this unlined storage lagoon and the suspected interconnection of that groundwater to Columbia Slough, the Department previously required the permittee to evaluate groundwater in the area of the Triangle Lagoon. Risk based assessments were carried out under the DEQ site assessment section's oversight.

Environmental contaminants were identified at levels requiring action. The City proposed and has begun a project addressing the groundwater concerns through a number of changes at this site. The operational portion of the storage lagoon will be lined with an impermeable membrane.

Contaminated materials dredged from the lagoon during the construction activities will be contained in monofill berms with leachate controls and groundwater monitoring wells to ensure the long-term containment of the contaminants. The permit includes monitoring requirements related to the groundwater monitoring wells as well as a compliance condition related to this project.

### **Pollutants Discharged**

The current permit allows City of Portland to discharge treated effluent from the wastewater treatment plant year round. The permit sets limits on the following pollutants: Five-day biochemical oxygen demand (BOD<sub>5</sub>), total suspended solids (TSS), E. coli and total residual chlorine. The permit also regulates pH and removal efficiency.

The proposed permit will regulate the same pollutants.

### **Outfalls**

Treated wastewater is discharged to Columbia River from Outfalls 001 and 003. Either of these outfalls can handle normal plant flow and have been used interchangeably for final effluent disposal. In the long term, as wet weather flow increases, the use of both outfalls will become necessary under rain induced higher flows. Additional discharge structures exist at North Portland Harbor on the Columbia River (outfall 002), on the Columbia Slough near the plant site (outfall 002.1) and at the main channel of the Columbia River (outfall 002.2). These structures will only discharge treated effluent and will be activated only during emergency conditions when use of primary outfalls is interrupted or limited for cause. (See attached "Columbia Boulevard WTP Liquid Process Schematic 4)

### **Mixing Zone Analysis**

The Clean Water Act allows for the use of mixing zones, also known as “allocated impact zones”, as long as acute toxicity to drifting organisms is prevented and the integrity of the waterbody as a whole is not impaired. Mixing zones allow the initial mixing of waste and receiving water, but are not designed to allow for treatment. EPA does not have specific regulations pertaining to mixing zones. Each state must adopt its own mixing zone regulations.

The Department has adopted the two-number aquatic life criteria and developed mixing zone regulations with respect to that. The regulations are primarily narrative and essentially require the permit writer to use best professional judgment in establishing the size of the mixing zone. There are essentially two allowable mixing zones for each discharge: 1) The acute mixing zone, also known as the zone of initial dilution (ZID), and 2) the chronic mixing zone, referred to as the regulatory mixing zone (RMZ). The acute mixing zone is designed to prevent lethality to organisms passing through the ZID. The chronic mixing zone is designed to protect the integrity of the entire water body as a whole. The allowable size of the mixing zone should be based upon the relative size of the discharge to the receiving stream, the beneficial uses of the receiving stream, location of other discharges to the same water body, location of drinking water intakes, and other considerations. More specific guidance is available from EPA regarding criteria used in appropriately sizing a ZID or RMZ.

The Department’s mixing zone regulations state the mixing zone must be less than the total stream width as necessary to allow passage of fish and other aquatic organisms. Early recommendations regarding the size of the zone of passage originated from the Department of Interior (1968). They recommended a zone of passage of 75 percent of the cross-sectional area and/or volume of flow of the receiving stream. Based on this recommendation, the Department’s standard practice is to allow no more than 25 percent of the stream flow for mixing zones.

The current permit defines several separate plant effluent mixing zones. For Outfall 001, the RMZ is that portion of the Columbia River within 375 feet of the effluent diffuser. The ZID is 38 feet around the diffuser. For Outfall 003, a RMZ of 385 feet around the effluent diffuser is defined. In addition a ZID of 39 feet was established. These outfalls were sized and based on stream studies and modeling to assure that water quality standards would be protected. For outfall 001, the studies recommend that the ZID and RMZ be sized in order to meet the TRC (total residual chlorine) acute and chronic criteria at the ZID and RMZ boundaries, respectively (See Outfall Mixing Zone Study, City of Portland Columbia Boulevard Wastewater Treatment Plant, dated November 1992). For outfall 003, because wet weather flows are being dechlorinated, the critical effluent parameters used for sizing of the diffuser and mixing zone were ammonia, copper and lead. An outfall diffuser was designed and constructed that would assure that water quality standards be met even when the overlapping of the RMZ for Outfall 001 was taken into consideration. (see draft technical memorandum, CBWWTF Outfall Project #20.09.14 dated October 2, 1997)

The Department is proposing to retain the existing mixing zones. Mixing zones for outfalls 002.0, 002.1, and 002.2 are not designated as these outfalls would only discharge under emergency conditions.

### **Receiving Streams/Impact**

The designated beneficial uses of the receiving stream are: public and private domestic water supply, industrial water supply, irrigation, livestock watering, anadromous fish passage, spawning and rearing, salmonid passage, spawning and rearing, resident fish and aquatic life, wildlife and hunting, fishing, boating, water contact recreation, aesthetic quality, hydro power and commercial navigation and transportation.

The water quality standards for the Willamette Basin (Oregon Administrative Rules 340-41) were developed to protect the beneficial uses for the basin. Treated wastewater is discharged to Columbia River at river mile 105.5. At this location, the Columbia River is water quality limited for temperature during the summer months and Polynuclear Aromatic Hydrocarbons (PAHs) and several toxic parameters (PCBs, pesticides [DDT & DDE], and arsenic) year round. This treatment facility is not expected to be a source of PAHs, PCBs or pesticides. Arsenic monitoring results were reviewed using a reasonable potential analysis. Further discussion is provided below.

Prior to the start of the Permittee's CSO Control Program (implementation of the LTCP) in the early 1990s, there were on the order of 60 combined sewer overflow events per year encompassing as many as 100 calendar days. The Columbia Slough and Willamette River experienced exceedances of the ambient bacteria criteria as a result of the overflows for significant portions of the year. The contact recreation beneficial use of the streams was impaired as persons coming into contact with the untreated sewage were exposed to the risk of contracting disease.

Upon completion of the CSO Control Program, overflows to Columbia Slough will be rare, and current modeling results indicate that overflows to the Willamette will occur only two times per year, typically during the wet season, for a total of less than 20 hours. The public will be able to use the streams throughout the year with a dramatically reduced risk of contracting disease.

### **Reasonable Potential Analysis**

A reasonable potential analysis was conducted using effluent testing data from 2003 and 2004 included in the renewal application. When determining whether a discharge has the potential to exceed water quality standards, the Department accounts for the variability of the effluent. A multiplier is used to account for effluent variability in accordance with the methods outlined in EPA's *Technical Support Document for Water Quality Based Toxics Control* (March 1991). To determine whether the discharge has a reasonable potential to exceed water quality standards for these pollutants, a spreadsheet that simulates the approach in EPA's *Technical Support Document for Water Quality Based Toxics* was used. Maximum probable effluent concentrations (based on the multiplier), water quality criteria, and mixing zone dilution data are used to determine whether the discharge has a reasonable potential to exceed water quality standards. The results of the reasonable potential analysis are attached. The results indicate that the discharge does not have a reasonable potential to exceed water quality standards for these parameters except for Chlorine. Other than for Chlorine, water quality based effluent limits are not proposed for these pollutants.

The following table summarizes the input data used in the reasonable potential analysis to determine if water quality based effluent limits for toxics are appropriate in this permit. The data summarized below is effluent sampling data provided with the City's November 2005 application materials.



<u>Toxic Parameter</u>	Number of Samples	Maximum value (µg/L)	Coefficient of variation
Arsenic	37	1.32	0.61
Cadmium	37	0.32	0.75
Chromium	37	9.48	0.90
Copper	37	33.3	0.34
Cyanide	37	300	1.51
Lead	37	8.39	0.95
Mercury	37	0.09	0.88
Nickel	37	52.5	0.13
Selenium	37	0.98	0.45
Silver	37	1.48	0.43
Zinc	37	95.4	0.33
Ammonia	26	35.6	0.21
Chlorine (May-Oct.)	184	0.68	0.26
Chlorine(Nov.-Apr.)	181	0.79	0.33

The data used in the RPA for the receiving stream was based on a literature search of mixing zone studies on the Columbia River. Most of the ambient background stream data points appear to have been interpreted from a Lower Columbia River Bi-state Water-Quality study completed in the mid-1990s. In accordance with the DEQ's September 2005 Reasonable Potential Analysis for Toxic Pollutants Internal Management Directive, the permit will include requirements for ambient stream data gathering prior to the next permit renewal.

### **Temperature**

The applicable temperature standard for the receiving stream is a maximum of 68°F, based on a seven-day average of maximum daily temperature readings.

Stream temperatures are generally rising throughout the State of Oregon and many streams violate the applicable temperature standard in the summer. Point source dischargers are required to help stop and reverse the warming trend. In order to prevent further warming, most discharge permits will identify the maximum allowable thermal discharge. The permit must also prohibit further increases.

The streams in this basin are water quality limited for temperature and may not fully support the spawning and rearing of salmonid species. The proposed permit addresses the potential impact of this discharge on stream temperature. The effluent temperature at some times of the year exceed the applicable temperature standard for the receiving stream. However, the effluent is not expected to exceed 77° F at any time. 77° F is considered to be lethal for salmonids.

A Total Maximum Daily Load (TMDL) addressing the water quality limited status for temperature has not yet been approved for the Columbia River.

The discharge will not cause a measurable increase of temperature at the edge of the mixing zone. A “measurable increase” is defined as greater than a 0.5° F increase at the edge of the mixing zone, factoring in the effluent temperature and dilution at the edge of the mixing zone, and using the applicable stream temperature standard. Further temperature discussion is included under effluent limits.

### **Stormwater**

General NPDES permits for stormwater are required for facilities with a design flow of greater than 1 MGD if stormwater is collected and discharge from the plant site. Because this facility discharges stormwater from the plant site, a separate stormwater permit is necessary. The Columbia Boulevard plant had a 1200-COLS permit in place that expired in 12/2004.

### **Permit History**

No substantial changes from the previous permit are proposed in this permit. Some of the identified CSO discharge points have been removed from the permit, as system changes have resulted in either removal or conversion to stormwater-only outfalls. This permit includes the delineation for the mixing zones that will be identified for the CSO discharges that remain following completion of the west bank of the Willamette River control of CSOs in 2006. The basis for these mixing zones is detailed in a technical memorandum entitled “Development of Mixing Zones For Residual CSO Discharges” by Limno-Tech, Inc. dated October 2003.

An anti-degradation review (OAR 340-041-0026(1) (a)) was completed with a recommendation to proceed with this permit action. The proposed permit incorporates permit limits to maintain water quality standards. The proposed permit does not allow for an increase in mass load limits from the previous permit.

### **Compliance History**

This facility was last inspected June 28, 2005, and was found to be operating in compliance.

The monitoring reports for this facility were reviewed for the period since the current permit was issued, including any actions taken relating to effluent violations. The permit compliance conditions were reviewed and all inspection reports for the same period were reviewed. Based on this review, the following violations have been documented at this facility during the term of the current permit.

Date of Violation	Type of Enforcement Action	Description of Violation
August 19, 1998	Notice of noncompliance	Dry weather discharge from CSO. Failure to do necessary public notification.
January 13, 1999	Civil penalty	Discharge of raw sewage from Sullivan PS
March 6 & 9, 1999	Notice of noncompliance	Discharge of undisinfectd treated effluent.
January 29, 2000	Notice of noncompliance	Contractor cited for unauthorized discharge
June 9, 2000	Notice of noncompliance	Discharge of undisinfectd effluent.
March/99 and June/00	Civil penalty	Discharging undisinfectd effluent
March 18, 2001	Civil penalty	Discharge of raw sewage from Ankeny PS

Final May 2006

Dec/01 and Jan/03	Notice of noncompliance	Columbia Slough overflow events
March 28, 2002	Notice of noncompliance	CSO control structures not meeting design
January 15, 2003	Notice of noncompliance	Dry weather discharge from CSO diversion
March 8, 2005	Notice of noncompliance	Discharge from Hayden Island PS
August 25, 2005	Civil penalty	Discharge from Hayden Island PS
November 9, 2005	Pre-enforcement Notice	Sewage overflows 2001 to present
November 18, 2005	Civil penalty	Sewage overflows 2001 to present

## PERMIT DISCUSSION

### Face Page

The permittee is authorized to construct, install, modify, or operate a wastewater collection, treatment, control and disposal system. Permits the discharge of treated effluent to the Columbia River within limits set by Schedule A and the following schedules. Other discharges that are covered by this permit include discharges from the combined sewer system and from a reclaimed water system.

### Schedule A - Waste Discharge limitations

#### BOD and TSS concentration and mass limits

The Department is proposing to retain the existing concentration limits from the previous permit for the CBWTP. The proposed monthly average BOD<sub>5</sub> concentration limit is 30 mg/L with a weekly average limit of 45 mg/L. The proposed monthly average TSS concentration limit is 30 mg/L with a weekly average limit of 45 mg/L.

The existing treatment facility is not designed to meet the minimum design criteria for BOD<sub>5</sub> or TSS in the summer. In accordance with OAR 340-041-0061(4)(c), meeting the more stringent levels of treatment will be deferred until it is necessary to expand or otherwise modify or replace the existing treatment facilities. The existing facility can comply with the winter period minimum design criteria.

The mass limits for biochemical oxygen demand (BOD<sub>5</sub>) and suspended solids (TSS) are based on the design average dry weather flow (ADWF) of 100 MGD and the monthly average BOD<sub>5</sub> and TSS concentration limits of 30 mg/L and 30 mg/L, respectively. Mass load limitations are rounded to two significant figures.

#### BOD<sub>5</sub> and TSS

The limits are:

(1) Year round:

Parameter	Average Effluent Concentrations		Monthly Average lb/day	Weekly Average lb/day	Daily Maximum Lbs
	Monthly	Weekly			
BOD <sub>5</sub>	30 mg/L	45 mg/L	25000	37500	50000
TSS	30 mg/L	45 mg/L	25000	37500	50000

Calculations:

(1) BOD<sub>5</sub>

- (a) 100 MGD x 8.34 #/gal x 30 mg/L monthly avg. = 25000 lbs/day
- (b) 25000 lbs/day monthly avg. x 1.5 = 37500 lbs/day weekly avg.
- (c) 25000 lbs/day monthly avg. x 2.0 = 50000 lbs/day daily max.

(2) TSS

- (a) 100 MGD x 8.34 #/gal x 30 mg/L monthly avg. = 25000 lbs/day
- (b) 25000 lbs/day monthly avg. x 1.5 = 37500 lbs/day weekly avg.
- (c) 25000 lbs/day monthly avg. x 2.0 = 50000 lbs/day daily max.

A review of recent monitoring data indicates the City should be able to comply with the permit limits.

No changes from the previous permit are proposed.

BOD and TSS Percent Removal Efficiency

A minimum level of percent removal for BOD<sub>5</sub> and TSS for municipal dischargers is required by the Code of Federal Regulations (CFR) secondary treatment standards (40 CFR, Part 133). An 85 percent removal efficiency limit is included in the proposed permit to comply with federal requirements. The permit recognizes that the facility may provide less than 85% removal due to wet weather flows at times. When flow exceeds 100 MGD, the CBWTP is required to be operated as efficiently as is practicable. The CBWWTF limits for the facility require that a certain percent removal be achieved from the primary clarifiers. The limits are in accordance with OAR 340-041-0061(10). The CBWWTF is required to have an annual average percent removal of not less than 50% for BOD and 70% for TSS.

pH

The main stem Columbia River basin specific criteria for pH is found in OAR 340-041-0104(1). The allowed range is 7.0 to 8.5. The proposed permit limits pH to the range 6.0 to 9.0. This limit is based on Federal wastewater treatment guidelines for sewage treatment facilities, and is applied to the majority of NPDES permittees in the state. Within the permittee's mixing zone, the water quality standard for pH does not have to be met. It is the Department's belief that mixing with ambient water within the mixing zone will ensure that the pH at the edge of the mixing zone meets the standard, and the Department considers the proposed permit limits to be protective of the water quality standard.

Bacteria

The proposed limits are taken from the Oregon bacteria rule which is found in OAR 340-041-0009. This rule establishes numeric instream water quality standards (OAR 340-041-0009(1)) and effluent limitations as well as the methodology for establishing a violation (OAR 340-041-0009(5)). It also establishes a prohibition against discharging raw sewage (OAR 340-041(2)) except during storm events that exceed specified winter and summer design criteria (OAR 340-041-0009(6) & (7)) or, in the case of CSO control areas, when an approved bacteria control plan is in place (OAR 340-041-0009(6)(A)).

It should be noted that to be in compliance with OAR 340-0041-0009 in non-CSO control areas, a permit holder must comply with both the instream numeric bacteria standard as well as the prohibition against discharging raw sewage. This means that if overflows from a wastewater conveyance system result in exceedances of the instream numeric criteria, the permit holder may still be subject to enforcement action even if the overflow occurred during a storm event larger than what the system was designed to handle. In such cases, DEQ will exercise enforcement discretion.

The proposed limits for this permit are a monthly geometric mean of 126 *E. coli* per 100 mL, with no single sample exceeding 406 *E. coli* per 100 mL. If a single sample exceeds 406 *E. coli* per 100 mL, then the permittee may take five consecutive re-samples. If the log mean of the five re-samples is less than or equal to 126, a violation is not triggered. The re-sampling must be taken at four hour intervals beginning within 28 hours after the original sample was taken. This is consistent with OAR 340-041-0009(5).

The proposed effluent limits are achievable through proper operation and maintenance.

In addition to effluent limits for bacteria, this permit requires the permit holder to control CSOs and SSOs. CSOs are discussed on page 16 under the heading Combined Sewer Overflows/Outfalls. SSOs are discussed on page 20 under the heading Emergency Overflows (Sewer System Overflows).

### Chlorine Residual

Disinfection of the effluent with chlorine is the process the permittee uses to comply with the waste discharge limitations for bacteria. Chlorine is a known toxic substance and as such is subject to limitation under Oregon Administrative Rules. The rule (OAR 340-041-0033) states in part that toxic substances shall not be discharged to waters of the state at levels that adversely affect public health, aquatic life or other designated beneficial uses. In addition, levels of toxic substances shall not exceed the criteria listed in Table 20 which were based on criteria established by the EPA and published in Quality Criteria for Water (1986), unless otherwise noted.

However, OAR 340-041-0053 states that the Department may designate a portion of a receiving water to serve as a zone of dilution for wastewaters and receiving waters to mix thoroughly and this zone will be defined as a mixing zone. The Department may suspend all or part of the water quality standards, or set less restrictive standards, in the defined mixing zone, provided the water within the mixing zone is free of materials in concentrations that will cause acute toxicity to aquatic life as

measured by the acute bioassay method and outside the boundary of the mixing zone is free of materials in concentrations that will cause chronic toxicity.

Furthermore, 40 CFR §122.44(d) states that permit limitations must control all pollutants or pollutant parameters which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality. The fresh water criteria for chlorine were used to calculate permit limitations. According to OAR 340-041, Table 20, chlorine concentrations at 11 µg/L can result in chronic toxicity in fresh waters while 19 µg/L can result in acute chlorine toxicity in fresh waters.

Compliance with acute toxicity criteria is required at the edge of the Zone of Immediate Dilution (ZID) and compliance with chronic toxicity criteria is required at the edge of the mixing zone. The existing permit states that the total chlorine residual for Outfall 001 shall not exceed 1.0 mg/L. City of Portland has continuous monitors evaluating total residual chlorine in the final effluent. For compliance purposes the permit requires that an hourly average of the continuous data be used to determine the daily maximum for any given day.

The previous permit's limit was derived by the Department after an evaluation of the dilution available within the mixing zone and ZID using EPA's CORMIX2 mixing zone computer model. The Department proposes to retain the existing residual chlorine limit. The permittee uses a multi-port diffuser to enhance dilution within the mixing zone to reduce potential toxic effects on the receiving stream and meet stream standards. The permittee should be able to meet the limits on a consistent basis with the facilities available. Since the previous permit, the permittee has added capability to dechlorinate effluent and a second outfall (003) for captured and treated combined sewage discharge flow. Though a mixing zone study was completed for this discharge point, because of the planned dechlorination facility, an evaluation to determine chlorine limits for this outfall was not done. The permit requires that the chlorine level from Outfall 003 not exceed 0.2 mg/L. The dechlorination facilities are used to assure that effluent chlorine levels remain well below the in-stream standard.

#### Temperature

This segment of the Columbia River serves as a migration corridor for anadromous fish. OAR 340-041-0028(4)(d) states that the 7-day average maximum temperature of a stream identified as a migration corridor may not exceed 20 °C (68 °F). As noted, this segment of the Columbia River does not meet water quality standards for temperature during the summer months. For streams that do not meet water quality standards, OAR 340-041-0028(12) states the following:

“Prior to completion of a temperature TMDL or other cumulative effects analysis, no single NPDES point source that discharges into temperature water quality limited water may cause the temperature of the water body to increase more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) above the applicable criteria after mixing with either twenty-five (25) percent of the stream flow or the temperature mixing zone, whichever is more restrictive.”

Since a temperature TMDL has not been approved for the Columbia River, the above provision from OAR 340-041-0028(12) applies. A mass balance analysis was conducted to determine whether the discharge would cause a temperature increase greater than 0.3 °C. The calculation is as follows:

$$T_e = [(T_{mz} * Q_{mz}) - (Q_s * T_s)] / Q_e$$

Where:

$T_e$  is the temperature in the effluent;

$T_{mz}$  is the temperature at the edge of the mixing zone (20.3 °C);

$Q_{mz}$  is the dilution at the edge of the mixing zone (97);

$Q_s$  is the portion of the Columbia River available for mixing (96);

$T_s$  is the water quality standard for the Columbia River (20 °C); and

$Q_e$  is the effluent dilution factor when compared to the stream (1).

The mass balance analysis based on the available dilution within the mixing zone indicates that for this point source to increase the stream temperature by 0.3 °C the temperature for the Columbia Boulevard facility would have to be 49.1 °C. Portland has not been reporting routine effluent temperature data. The application included a limited number of temperature data points. Portland's application showed that the average temperature during the summer was 19.6 °C and the maximum summer effluent temperature was 20.6 °C. Thus, the discharge is not expected to increase temperature at the edge of the mixing zone by more than 0.3 °C.

Based on the above analysis, there appears to be no reasonable potential that this facility will cause or contribute to the temperature issues in the Columbia River.

#### Thermal Plume Criteria

Recent revisions to the Department's water quality standards include temperature thermal plume limitations in OAR 340-041-0053(d). This section of the rules contains criteria to prevent potential adverse impacts that may result from thermal plumes. Note that the temperature thermal plume limitations that the Department has adopted are similar to the recommendations in the April 2003 EPA Region X Temperature guidance. The criteria as they apply to the Columbia Boulevard STP are discussed below:

- *OAR 340-041-0053(d)(A)*: Impairment of an active salmonid spawning area where spawning redds are located or likely to be located.  
*Columbia Boulevard STP discharge*: There is no salmonid spawning in this segment of the Columbia River. This segment of the Columbia River serves as a migration corridor for salmonids.
- *OAR 340-041-0053(d)(B)*: Acute impairment or instantaneous lethality is prevented or minimized by limiting potential fish exposure to temperatures of 32 °C or more to less than 2 seconds.  
*Columbia Boulevard STP discharge*: Based on temperature data submitted on the application, the maximum effluent temperature at outfall 001 is 20.6 °C. Thus, the discharge is not expected to cause an acute impairment or instantaneous lethality.

- *OAR 340-041-0053(d)(C)*: Thermal shock caused by a sudden increase in water temperature is prevented or minimized by limiting potential fish exposure to temperatures of 25 °C or more to less than 5% of the cross-section of 100% of the 7Q10 flow of the waterbody.  
*Columbia Boulevard STP discharge*: The reported temperature of this effluent has not exceeded 25 °C, thus the discharge is not going to be a cause for thermal shock.
- *OAR 340-041-0053(d)(D)*: Unless ambient temperature is 21 °C or greater, migration blockage is prevented or minimized by limiting potential fish exposure to temperatures of 21 °C or more to less than 25% of the cross-section of 100% of the 7Q10 flow of the waterbody.  
*Columbia Boulevard STP discharge*: Based on information provided in the mixing zone study for this facility, the Columbia River at the location of the outfall is over 2200 feet wide. The 385 foot wide mixing zone does not exceed 25% of the cross section.

Thus, the analysis indicates that the discharge from the Columbia Boulevard STP meets the temperature thermal plume limitations in OAR 340-041-0053(d).

#### Mixing Zone and Zone of Immediate Dilution

The allowable regulatory mixing zone (RMZ) for Outfall 001 is that portion of the Columbia River within three-hundred-seventy-five (375) feet of the diffuser. The Zone of Immediate Dilution (ZID) shall be defined as that portion of the allowable mixing zone that is within thirty-eight (38) feet of the point of discharge. For Outfall 003, the allowable RMZ in the Columbia River is 385 feet around the diffuser with a ZID of 39 feet. Outfalls 002.0 002.1 and 002.2 provide relief from the long chlorine contact chamber/pipeline between the plant site on Columbia Boulevard and the outfall location on the Columbia River north shore side of Hayden Island. Discharges are not routine at these outfalls and will be limited to emergency circumstances only, so defined mixing zones are not established.

Total chlorine residual and chlorine used must be monitored daily.

The Department believes that the beneficial uses of the receiving stream will not be affected by the discharge and these mixing zones and that the defined mixing zones meet the criteria in the mixing zone rule.

#### Combined Sewer Overflows/Outfalls

In 1994 EPA issued its *CSO Control Policy*. In 2000, Congress amended the Clean Water Act to require that subsequently issued permits and orders “conform” to it. City of Portland has been under a Department Order (Stipulation and Final Order No.WQ-NWR-91-75) with DEQ since 1991, amended in 1994 (ASFO). The ASFO was designed to address the combined sewer overflow (CSO) issues facing the city under an agreed to timeframe and was approved by the EQC. In April 1995, the CSO facilities plan developed under the ASFO was also approved by the EQC.



DEQ views the City of Portland's CSO facilities plan as constituting the bacteria control plan referred to in the bacteria rule (OAR 340-041-0009(6)(a)) which was adopted in 1996. Having an approved bacteria control plan allows sewer overflows in CSO communities during storm events that occur more frequently than the design storm established (OAR 340-041-0009(6)).

The city remains on schedule to complete implementation of the ASFO requirements and the requirements from EPA's CSO Control Policy by 2011. This permit contains some of the compliance and monitoring requirements necessary to support the ASFO timetable. The identified combined sewer overflow points in this permit may be active during storm events and are permitted provided the city is in conformance with the EPA CSO Policy's technology-based criteria for meeting the requirements of the Clean Water Act (referred to as "Nine Minimum Controls").

### ***Nine Minimum Controls***

The *Policy* characterizes the Nine Minimum Controls (NMCs) as minimum technology-based controls that can be implemented without extensive engineering studies or significant capital costs and which can be implemented in a relatively short period of time. The NMCs are intended to reduce CSOs and their effects on receiving streams while major capital intensive CSO control facilities that will significantly reduce CSOs are being designed and constructed.

In the 1997 renewal of this Permit, the NMCs were included, although they were not explicitly identified as such. During 2004 and 2005 the Permittee, EPA Region X and DEQ had extensive conversations. The outcome was the elaboration of the NMCs included in this version of the Permit. The specific NMCs consisted of the development and implementation of operational/maintenance procedures and activities which will, to the extent possible prior to the completion of the major infrastructure facilities required by the ASFO, reduce the CSOs during wet weather and prevent overflows during dry weather.

In summary, the permit incorporates the following nine minimum controls for CSOs into the permit in Schedule A:

1. Proper operation and regular maintenance programs for the sewer system and the CSOs
2. Maximum use of the collection system for storage
3. Review and modification of pretreatment requirements to assure CSO impacts are minimized
4. Maximization of flow to the publicly owned treatment works for treatment
5. Prohibition of CSOs during dry weather
6. Control of solid and floatable materials in CSOs
7. Pollution prevention

8. Public notification to ensure that the public receives adequate notification of CSO occurrences and



CSO impacts.

9. Monitoring to effectively characterize CSO impacts and the efficacy of CSO controls

### ***Sensitive Areas***

At the time the Permittee was developing its CSO Management Plan (LTCP), CSOs discharged to the Columbia Slough (1.3 billion gallons per year) and the Willamette River (4.7 billion gallons per year).

There was agreement between the Permittee, DEQ and interested parties that Columbia Slough was the more sensitive water body in that it had severe and multiple water quality problems. A TMDL was in development for the stream (adopted in 1998). Therefore, the final CSO Management Plan and the ASFO required that the first major CSO control facilities to be built would be in the Columbia Slough sewer basins. These were completed by December 2000.

The reach of the Willamette River impacted by CSOs runs from just upstream of Sellwood Bridge to the Columbia River confluence at Kelly Point. The Department does not believe that any part of this reach can be characterized as significantly more sensitive based on criteria in the CSO Control Policy. There are no drinking water intakes. Anadromous fish must pass the entire reach. There are no shell fish beds. Depending on the season, the entire reach is used for boat fishing, sailing, skiing, jet skiing and “fun in the sun” boating. There are boat ramps at several dispersed locations. The two major City Parks (Willamette; Cathedral) with waterfront access are at opposite ends of the reach.

Notwithstanding this general homogeneity, the CSO Management Plan sequenced the control of Willamette River CSO discharge points such that the five outfalls in the area of Cathedral Park were controlled or removed from service by 2001 and those outfalls closest to Willamette Park were controlled in 2006 upon completion of the West Side CSO tunnel.

### ***Performance standards***

Performance standards for the CSO areas were established in accordance with OAR 340-041-0009 (6) and (7). This rule allows for case by case establishment of alternative performance standards by

Final May 2006

the Oregon Environmental Quality Commission (EQC) for facilities under a bacteria control management plan. The City of Portland developed its 1994 Combined Sewer Overflow Management Plan which in conjunction with a DEQ Amended Stipulation and Final Order (ASFO) established the performance standards. For the Columbia Slough CSO area, wet season overflows (November 1 through April 30) are prohibited except under a storm with a greater than five year return frequency. In the remainder of the CSO control area during the wet season the facilities are being designed to capture up to a four-in-one-year return frequency. In the Columbia Slough CSO control area, during the dry season (May 1 through October 31) the facilities are designed to contain storms up to the 10 year return frequency. In the remainder of the CSO control area, facilities are being designed to prevent overflows during the dry season except during storms greater than or equal to a three year return frequency.

### ***Demonstration Approach***

It is the Department's expectation that in accordance with *CSO Control Policy* the Permittee will use the Demonstration Approach to document compliance with Water Quality Standards and protection of designated uses. The demonstration will be documented in the report that the ASFO requires the permittee to submit within one year of controlling a group of discharge points.

### ***Monitoring Program***

As a "CSO Monitoring and Sampling Supplement" to the renewal application, the City of Portland provided information on the monitoring and sampling program they have implemented as part of their CSO control program. This supplement includes four sections:

1. BES Environmental Monitoring Services describing the basis for how monitoring and sampling are performed.
2. HYDRA Monitoring System Infrastructure presents the backbone system whereby permanent rainfall, flow rate and sewer level monitoring are performed on a continual basis.
3. Combined Sewer Flow and Level Monitoring provides the details of where the combined system and CSO outfalls are monitored and how the data is used.
4. CSO Water Quality Sampling describes the activities and parameters that make up the water quality sampling program in the Willamette River and the Columbia Slough.

### **Emergency Overflows (Sewer System Overflows)**

Outside the CSO control area, facilities (conventional separate sewers) with designed overflows (typically pump stations) are required to meet the performance standard established in the Oregon Administrative Rules. No waste may be discharged from these outfalls unless it is due to a storm event as allowed under OAR 340-041-0009(6) and (7). In the summer, raw sewage overflows are prohibited except during a storm event greater than the one-in-ten-year, 24-hour duration storm. In the winter, overflows at less than the design storm are prohibited as soon as practicable and by no later than January 1, 2010. After January 1, 2010, winter overflows will be prohibited except during a storm event greater than the one-in-five-year, 24-hour duration storm.

It should be noted that to be in compliance with OAR 340-0041-0009, a permit holder must comply with both the instream numeric bacteria standard (OAR 340-041-0009(1)) as well as the prohibition against discharging raw sewage (OAR 340-041-0009(2)). This means that if overflows from a wastewater conveyance system result in exceedances of the instream numeric criteria, the permit holder may still be subject to enforcement action even if the overflow occurred during a storm event larger than what the system was designed to handle. In such cases, DEQ will exercise enforcement discretion.

The Department does not have the necessary information available to ascertain if the City can at this time meet the above OAR mandated winter overflow performance standard for the pump stations identified in the permit. A compliance condition has been included in Schedule C requiring an evaluation of the pump stations be completed during this permit cycle. This permit lists 28 SSO points.

### Reclaimed Water

The permit includes a designated outfall for reclaimed water. This provides the City with the option of offering reclaimed water provided the permit limitations are met and that the activity conforms with a Reclaimed Water Use Plan approved by the Department prior to the activity commencing.

### **Schedule B - Minimum Monitoring and Reporting Requirements**

In 1988, the Department developed a monitoring matrix for commonly monitored parameters. Proposed monitoring frequencies for all parameters are based on this matrix and, in some cases, may have changed from the current permit. The proposed monitoring frequencies for all parameters correspond to those of facilities of similar size and complexity in the state.

The permittee is required to have a laboratory Quality Assurance/Quality Control program. The Department recognizes that some tests do not accurately reflect the performance of a treatment facility due to quality assurance/quality control problems. These tests should not be considered when evaluating the compliance of the facility with the permit limitations. Thus, the Department is also proposing to include in the opening paragraph of Schedule B a statement recognizing that some test results may be inaccurate, invalid, do not adequately represent the facility's performance and should not be used in calculations required by the permit.

Monitoring for *E. coli* must be performed in accordance with one of the methods approved by the Department.

Total chlorine residual and chlorine used must be monitored daily.

Daily monitoring of influent and effluent flow is required in this permit. In addition, calibration of the flow meter is required on a regular basis.

Monitoring and reporting requirements for dioxin and dibenzofuran had been included in this facilities permit since the early 1990s. The city requested that the monitoring requirements be removed in an undated document titled "Columbia Boulevard Wastewater Treatment Plant (CBWTP) NPDES Permit-Dioxin Monitoring Requirements Elimination" that was submitted in November 2005. The request is primarily based on an EPA decision that imposition of numeric limits and management practices to regulate dioxins in land applied biosolids were unwarranted. The following were cited as the basis for the EPA decision:

1. Careful evaluation of revised/updated cancer risk assessment;
2. A screening ecological risk analysis (SERA);
3. A significant decrease in the concentration of biosolids-borne dioxins/dibenzofurans found under EPA's 2001 National Sewage Sludge Survey (NSSS) in contrast to the much higher contamination levels identified in biosolids during the earlier (1988) NSSS;
4. The perusal of considerable additional scientific evidence gathered and evaluated between 1988 and October 2003; and

5. Consideration that recently enacted air pollution abatement laws pertaining to combustion sources and the means of source control and pollution prevention are likely to continue to cause further decline of dioxin-like compounds.

Based on this request the Department believes that the continued monitoring of dioxin/dibenzofuran is neither warranted nor necessary at this time.

Temperature monitoring of the effluent is required. In addition, the permittee will be required to calculate the weekly average temperature of the effluent and the weekly thermal load discharged. Monitoring may be waived for certain months after two full years of monitoring are completed, provided the following condition is met: No single daily effluent temperature in that month for the past two years has exceeded the applicable stream temperature criteria.

The streams in this basin are water quality limited for temperature and may not fully support the spawning and rearing of salmonid species. This discharge has a reasonable potential to contribute heat to the water quality limited sections. Therefore, the Department is proposing to include stream monitoring for temperature. Monitoring sites are to be located just upstream of the point of discharge, and downstream just outside of the mixing zone. If continuous monitors are installed for the stream monitoring, then the devices must be audited (field checked for accuracy of temperature readings) in June and September, and visually checked each month to insure that the devices are still in place, and are still submerged. An annual report summarizing the weekly averages of the maximum daily temperature readings is required for the temperature data, for the effluent and the two stream monitoring sites. Monitoring may be waived for some months after two full years of monitoring, providing that no weekly effluent values exceed the applicable stream temperature criteria for that month.

Because this facility has a pretreatment program, the proposed permit includes a requirement to conduct whole effluent toxicity (WET) or bioassay tests using three species. Bioassay tests are to be conducted in accordance with EPA test methods and procedural requirements as defined in Schedule D. No consistent pattern of acute or chronic toxicity appeared in the test results submitted with the permit application. The permit will require additional whole effluent toxicity testing.

Bioassays must be conducted at least annually during the permit cycle.

In addition, the permittee must regularly perform a scan for priority pollutants in the plant influent and effluent. Certain specific toxic pollutants (metals and cyanide) must be monitored more frequently.

Bench scale digestion of digested biosolids is the process used to demonstrate compliance with vector attraction reduction requirements. Monitoring for further reductions in volatile solids in the bench scale digestion is proposed in the renewal permit.

Digestion of the biosolids is the process used to demonstrate compliance with pathogen reduction requirements. Monitoring the duration and temperature of biosolids digestion is proposed in the renewal permit.

The estimated duration and volume of each overflow from the emergency outfalls must be recorded.

The Department approved a Triangle Lake Groundwater Monitoring Plan titled Minimum Hydrogeologic Characterization and Groundwater Monitoring Plan by CH2MHill, dated December 19, 1991. The groundwater sampling at Triangle Lake was reviewed by Adolphson Associates, Inc. and a report was submitted to the DEQ dated February 18, 1998. That report contained a number of recommendations focused at addressing the groundwater concerns at this site. The permittee has completed the initial phase of retrofitting the lagoon to lessen the likelihood of groundwater impacts from the stored liquids and solids. The permittee is expected to complete this project with lining the operational portions of this site and sealing up contaminated soils in a monofill during this permit period. Additional groundwater monitoring wells were to be established and some wells were reconstructed as part of this project. The proposed permit includes a condition in Schedule B that requires monitoring each monitoring well for certain pollutant parameters at the frequencies specified in the approved plan and a Schedule C condition to submit plans and a schedule for the project to be completed. Quarterly and annual reporting of groundwater monitoring results is specified.

Discharge monitoring reports must be submitted to the Department monthly by the 15th day of the following month. The monitoring reports need to identify the principal operators designated by the Permittee to supervise the treatment and collection systems. The reports must also include records concerning application of biosolids and all applicable equipment breakdowns and bypassing.

Schedule B of the permit includes the requirement for the submittal of reports. The reports submitted will include a summary of the activities performed during this permit to implement the nine minimum controls, an annual report on temperature monitoring and an annual report describing biosolids handling activities.

#### **Schedule D - Special Conditions**

The proposed permit includes 15 special conditions and some contain compliance deadlines. The requirements include:

- 1) Should the permittee decide to release plant water to off-plant site users for reuse, a condition requiring the submission of recycled water use plan prior to releasing any effluent has been included.
- 2) The mixing zones established for this facility were based on models prior to the construction of the diffusers. A condition requiring in-stream model verification has been added to the permit.
- 3) A condition has been included that will require the permittee to review and report on the condition and operation of the pump stations under their control. The DEQ is primarily interested in how often pump stations experience “loss of standby” pump status at design storms less than the five year return frequency. OAR 340-041-0009(6) defines the winter performance standard that must be met by facilities that experience sanitary sewer overflows.

- 4) A condition requiring the submission of a “Wet Weather Operations Manual” that will detail the steps necessary to insure that flow to the secondary treatment plant is maximized.
- 5) This condition gives the City one year from issuance of this permit to propose changes to the existing pretreatment legal authorities and procedures to conform to the streamlining rules. These revisions must be submitted to the DEQ for approval before the pretreatment program may implement the new federal requirements.
- 6) A condition is included that requires within two years of the permit issuance a submission of plans and a schedule for completion of the Triangle Lake groundwater mitigation and protection project.
- 7) This condition requires the permittee to meet the compliance dates established in this schedule or notify the Department within 14 days following any lapsed compliance date.
- 8) A condition that biosolids be managed in accordance with the current approved management plan and includes
- 9) A condition allowing the permit to be reopened for changes or updates to the biosolids program in place.
- 10) Schedule D of this permit includes a condition specifying the necessary procedures for conducting whole effluent toxicity testing. In accordance with the Federal regulations, 40 CFR Part 122.21(j), new and existing POTWs which have formal pretreatment programs or an average dry weather design flow equal to or greater than 1 MGD are required to submit to the Department the results of toxicity testing with the permit application.

The Department also follows EPA guidance (Technical Support Document for WQ-based Toxics Control) by requiring bioassay tests using three species. Under OAR 340-041-0033, the Department has the authority to require biomonitoring, and to reduce toxicity if toxicity were to occur.

Due to the complexity of the tests and the rigorous quality control procedures, bioassays are generally not conducted by permittees, but rather by a laboratory which has expertise in conducting bioassays. Should this permittee choose to conduct the whole effluent toxicity tests in-house, the Department would require submittal, prior to conducting the tests, of complete details of the test methodology, and quality control and quality assurance procedures being proposed. The Department would review the submitted test procedures, and upon approval would require implementation of the procedures as submitted or as modified by the Department's comments.

Chemical specific effluent limits are calculated for the protection of aquatic life using site-specific information such as discharge rates and dilution ratios. These chemical limits are established so that the acute criteria are not exceeded in the mixing zone beyond any allowable zone of immediate dilution and chronic criteria are not exceeded beyond the edge of the permitted mixing zone. A receiving stream dilution and mixing zone analysis should be conducted if an analysis has not been conducted for the current mixing zone.



Effluent limits may not be established for the wide variety of chemical constituents in the wastewater discharge. Therefore, EPA requires that bioassays be conducted to assess the wastewater discharge. Should results of the bioassay tests indicate a potential for either acute or chronic toxicity, the Department may require further evaluation of the effluent and its effect on the receiving stream.

Bioassay tests are to be conducted in accordance with EPA test methods as defined in this condition. Procedural requirements for bioassay tests are also outlined in this condition.

- 11) The permittee must have the facilities supervised by personnel certified by the Department in the operation of treatment and/or collection systems.
- 12) A condition that reflects that the permit may need to be reopened to address CSO issues that were not considered during the permit renewal process at some time during the life of this permit.
- 13) There is a condition in Schedule D requiring proper operation and maintenance of groundwater monitoring wells. The condition also specifies procedures for abandoning old wells and installation of new wells.
- 14) A condition is included to require sampling necessary to meet renewal application documentation needs and to provide other data necessary to complete a reasonable potential analysis for any identified pollutants of concern.
- 15) The last special condition requires Department notification should facility malfunctions occur that might result in the permittee's inability to comply with all permit conditions.

#### **Schedule E - Pretreatment Program**

The proposed permit includes a Schedule E with conditions that require implementation of the industrial pretreatment program.

#### **Schedule F- NPDES General Conditions**

The General Conditions applicable to all holders of NPDES permits are listed. These are divided into the following sections: Standard Conditions; Operation and Maintenance of Pollution Controls; Monitoring and Records; Reporting Requirements; and Definitions.

The General Conditions were revised in 2008 as per EPA's request. Here is a summary of the changes:

- There are additional citations to the federal Clean Water Act and CFR, including references to standards for sewage sludge use or disposal.
- There is additional language regarding federal penalties.
- Bypass language has been made consistent with the Code of Federal Regulations.

- Overflow language has been modified. Formerly the language stated that overflows in response to the five or ten year event would not violate the permit. Now it states that such overflows do not violate the prohibition against discharging raw sewage.
- Requirements regarding emergency response and public notification plans have been made more explicit.
- Language pertaining to duty to provide information has been made more explicit.
- Confidentiality of information is addressed.